Smoke Managers Subcommittee
Conference call
01.30.2013

Roll Call:
Mike Broughton, Colorado/USFWS
Claudia Standish, New Mexico/BLM State Office
Josh Hall, New Mexico/BLM State Office
Brian Bohlmann, Wyoming/Air Quality Division
Leif Paulson, Wyoming/Air Quality Division
Brian Finneran, Oregon/Oregon DEQ
Ursula Parker, California/Butte County AQMD
Thomas Dzomba, Montana/USDA Forest Service, Fire, Aviation and Air
Karen Brooks, California/San Luis Obispo APCD
Rick Gillam, U.S. EPA, Southeast Region, Atlanta, Georgia
Nick Yonker, Oregon/Dept of Forestry
Ann Hobbs, California/Placer County APCD
Gary Curcio, IPA FES-FE Forester, Retired NC Forester
Mary Anderson, Idaho/DEQ
Julie Simpson, Nez Perce Tribe
Andrea Boyer, Nez Perce Tribe
Mary Fauci, Nez Perce Tribe
Todd Richardson, Colorado/ BLM
Christine Paulson, Iowa/DNR
Carol Blocksome, Kansas/Kansas State University
Jim Brenner, Florida/Florida Forest Service
Doug Miedtke, Minnesota/Dept of Natural Resources
Mike McGown, US EPA, Region X
Mark Fitch, Idaho/National Park Service
Jennifer Godwin, Red Lake Nation, Minnesota
Lawra Boyce, South Carolina/South Carolina DHEC
Rick Boddicker, South Dakota/Department of Environment and Natural Resources
Dennis Dauterive, Mississippi/Forest Commission Fire Chief
Dar Mims, California/ARB
Dan Washington, Utah/ Eastern Great Basin Coordination Center
Eric Olson, Siskiyou County APCD
Jim Roehl, Tuolumne County APCD

The purpose of the Smoke Manager's Sub-Committee is to increase communications amongst the community of air quality professionals, other state and federal governmental agencies, land managers, and other persons conducting burning activities.

EPA Regulatory Update: PM2.5 Standards and Exceptional Events - Rick Gillam

- On December 14, 2012, the EPA strengthened the annual standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$ and retained the 24-hour daily standard and existing PM10 standard (150 $\mu g/m^3$).
- Rick wanted to highlight the great work that the smoke committee does and suggested everyone read the summary document was posted on the "myfirecommunity.net" site.

- EPA had proposed to include a secondary standard related to visibility but it was not finalized in December; the existing standard was retained.
- EPA updated the AQ index to make it consistent with the new standards. There a couple of maps to go along with that; one shows that EPA projects that by 2020 (when standards would be fully implemented) only seven counties in the USA, all in So. CA won't meet the standard for fed regulations. This is good news for the fire community and highlights that you need to be aware when doing prescribed burning near a populated area.

Josh Hall commented that they utilize the Wildfire Guide for Health Officials (located here: http://oehha.ca.gov/air/risk_assess/wildfirev8.pdf) to help determine impacts from smoke events; the document has recommendations for acute exposures. It was agreed that the document, which was last updated in 2008, should be revised with the new standards in mind. Later in the call, Dar Mims was advised of this by Josh. Mike B. relayed that there would be contact with Josh, Scott Kennedy EPA Region 9, and Rick Gillam, to talk about updates to the Wildfire Guide.

Mary Anderson commented that there are a couple of different groups, including WESTAR, that are dealing with the issue of acute exposure impacts.

Rick Gillam mentioned that he has read over the final rule-making, and EPA evaluated whether or not to go with less than a 24-hour standard and decided not to at this time.

Regarding Exceptional Events, the group the Rick is working with hopes to have a document out for public review by the end of the year. Likewise, regarding updates to the 1998 Policy on AQ and Prescribed Fires, work is ongoing and there may be something new by April. Info will be provided as it is available.

Wildfire Smoke Planning: Mike Broughton

Every year there is a hot spot: last year the hotspots were in the Rockies and the northwest, as well as in Northern CA. There was quite a bit of air quality/smoke cooperation with wildfire fighting teams and the plan is to expand on that this year. This past year there were a number of opportunities for improvement; wildfires aren't planned, so there is a lot of scrambling that goes on. In some places, coordination was better than others. In terms of planning for the next year, Mike invited Brian Finneran (Oregon DEQ) to talk about what they've done so far.

Brian Finneran: In September, Oregon saw about 3 weeks of extremely heavy smoke impacts, as did Washington and Idaho. PM2.5 levels in central Oregon at times were measured as high as 1,000 $\mu g/m^3$; impacts such as that hadn't been reported since 2002 (the result of a huge wildfire in southwestern Oregon). There was confusion at first as to how to bring the right people to the table to respond to the need; Red Cross was involved, shelters were set up and school closures and voluntary evacuations were all ordered. As a result of all that, in November a couple of multi-agency meetings were held to review the lessons learned/how to improve and a follow-up meeting has been planned. The goal is to develop a wildfire response protocol: who to contact and when, what roles and responsibilities are, monitoring details, smoke forecasting, who makes announcement for school closures, evacuations, etc. Currently there is no plan.

Oregon had learned in 2002 to use forecasters to determine smoke impacts and to update a website with information. This past summer, Washington developed a comprehensive smoke blog that had public info, current wildfire situation, what schools were closed, smoke exposure

levels, plus links to various state websites that had more info. Seeing the public benefit of this blog, Oregon is planning to use a blog in the future if needed. Westar has formed a workgroup to look into this to determine if this can be applied to different states as well. Oregon would be happy to share their results with other states.

Mike Broughton commented that this is exactly why this group is together; to share ideas/info that have been developed by one group with other groups and avoid "redeveloping the wheel."

Gary Curcio commented that for Brian F. to get ahead of the curve, Oregon should be looking at fire danger; the National Fire Danger System evaluates fuel conditions, and therefore evaluates burning conditions. Start with the size-up when teams/fire fighters are responding – look at what types of fuels are available to burn. It is new for these teams to address smoke; they don't think about how much smoke they are going to produce with suppression in conjunction with the smoke already produced by the fire.

Josh Hall added that in New Mexico, after the 2011 wildfires, they approached the Southwest incident management team last spring and pressed them for what their needs were so that they have a firm expectation of whether or not they need an air quality person. They have been able to use fuels info when there has been a start in an area to determine if they needed to get monitors out and got them in place right away. **Claudia Standish** commented that New Mexico's plans could be submitted as an example of one possibility on how to handle things.

Jim Brenner commented that the Florida Highway Patrol and Department of Transportation had an agreement signed regarding how they would work with one another to protect the public from smoke impacts on roadways/low and zero visibility situations. The agreement is available if anyone wants to work something out with their State Department of Transportation and law enforcement office(s). The Florida agencies at first didn't get the message until one year ago yesterday when 11 people died on I-75 west of Gainesville. The Highway Patrol had been told repeatedly that they were concerned about visibility problems and unfortunately, the ball was dropped. The road had been closed and then they thought they could reopen the six-lane interstate. Within 30 minutes, eleven people died. The "myfirecommunity" webpage shows a Superfog picture taken near the scene of the accident. Reactions from the public in regards to term "superfog": term isn't taken seriously, it doesn't reflect urgency. Lots of other terms have been suggested and input is welcomed. **Claudia** suggested the term, "death fog". Jim explained that the moisture from burning contributes to the fog. Florida did an investigation (into the January 29, 2011 incident) and the Highway Patrol got "pounded" in the media due to Florida Dept of Law Enforcement investigation. **Mike Broughton** will post the agreement under the dense fog picture on the myfirecommunity page and can also set up a page for wildfire planning ideas so that people can send documents, plans, ideas, and any other info that can be disseminated to the group.

<u>Smoke from Grassland Fires: Mike Broughton</u>

As we approach springtime, we are looking forward to grassland fires and thinking about smoke from those burns. **Carol Blocksome** says that the model that Kansas uses has improved from last year; it is more accurate in forecasting where the smoke from grassland fires will go. Regarding exceptional events, Kansas did get a flag for prescribed burn; this is nothing brand new. They are listening with interest to communication plan and don't anticipate that many

acres will be burned because things are so dry there, but presents a greater possibility that any fires would get away from them if they were started. Kansas models are run March–April, as this is during their fire season.

Rick Gillam wanted to mention that a few weeks ago EPA approved as an exceptional event the Kansas Flint Hills fires in relationship to ozone impacts. The document was very well done, a lot of effort and expensive modeling was put into it. **Carol B.** commented that they had a person on the project for six months full time and put about $120,000 into getting the exceptional events request approved. **Mike B.** commented that States are hoping that the EPA will help reduce the effort necessary to prove an exceptional event.

Geographic Clustering Discussion: Claudia Standish

This has been discussed in the past by **Carol Blocksome** and **Claudia**. Claudia asked if we should cluster into similar geographic groups in addition to the larger national group. The Plains states don't have a large national presence. The area has virtually no forest service or federal lands, and their needs are different. The Joint Fire Science Consortium shares ecological regions. Mike B. commented that it's a good idea; we get together on these calls once every two to three months. We have a nationwide agenda. In some areas, there are geographic groups that are logically put together; for example Dar Mims is involved in California's group, Idaho/Montana has a group, and Arizona and New Mexico work together. (It seems that) there is a need for additional coordination across the country. **Dar Mims** commented that it's a good idea for regions to get together and also likes this broader group because we can take the lessons learned in other regions to develop solutions in advance of things happening locally.

2013 International Smoke Symposium: Mike Broughton

The next international symposium is scheduled in October at the University of Maryland. Web access will be provided for at the symposium for those who cannot attend in person. There is significant interest in this, and as topic areas become identified they will be disseminated.

SmoC Workshop – PFW's Enhanced for Wildland Smoke Management, Smoke Dispersion Matrix for Wildfire and Prescribed Fire Application: Gary Curcio

(Please refer to handouts which Mike B. sent out as attachments to an email on 1/30/13).
Gary explained that there were four handouts in the earlier email, including Fire Weather Point Matrix Information, a type 3 (smaller) Incident Management Team (IMT) smoke management example and information on obtaining a PFW. The document containing slides 1-45 is described below:

Slide #2: How does dispersion transportation change from sunset to sunrise. With data from from NWS, smoke dispersion becomes more predictable, and we can plan for white outs/superfog. The NWS weathergrid is constantly fine tuned.
#4: We are going to review the slides and look at the Dad Wildfire, investigating products that were used/generated during the wildfire.
#5: We will review NWS products & Fire Weather Point matrix, associated with lat/long (fire danger station or airport station).
#6: This is the product that you will see coming from those stations. If you have a prescribed burn or wildfire you tell them the lat and log. This info will be pulled from their grid and you'll get fire weather intel from that site.

#7: Same product, colored boxes – red and green highlight the enhanced products added and blue boxes are standard products that you'd get, enhanced products for surface/vertical. (Data with no boxes or blue are normal/standard; red and green indicate enhanced products). .
#8: This shows the front page of the atmospheric model; it's not dynamic like Hysplit, but it does work. You can scan it, asks for mixing heights, ceiling heights, etc. Previous slide, all input is provided. To run model you've got one stop shopping for inputs on dispersion model.
#9: Hourly weather forecast graph – you can see highlighted in boxes again, all products from DFW but have been expanded. People can use this because they can enter any lat/long.
#10 This shows it in graph if you want. No 1 stability is critical, but in looking at other factors you can dismiss some others.
#11 This displays the same info in tabular results.
#12 Area forecast matrix – you can click on any one of these and see info like on slide #13
#14 – Weather activity planner – should give you enough info on conditions that may form superfog.
#15 – Look at bars to show if criteria are being met at critical hours.
#16- Summary of all products, Gary would use these on wildfires.
#17 – Example of success story, a 20,000 acre fire. What fuels are being consumed is one of the most difficult things to figure out. Different priorities. Make sure tools are there and are available to use. Arrows direct you to ground fire. Will determine lines of ground fires.
#18 – This is a photo taken the morning that they called for a superfog event. Looking back, the incident team wishes that they had dealt with the forecasters. They were doing burn outs.
#19 – Here you are looking at 4:07am PFW, issued Sat, June 23rd and was a heads up for what they would see on the 24th. On the vertical box, everything in there is critical. RH, Wind Spd, cloud cover, mixing height, transport wind speed was really low, extremely poor dispersion. The saw this 60 hours out. What they were conversing is that they would issue a special weather statement based on what they were seeing. Automatically sends out radio announcement. TV stations pick up on it, they would be talking about it. They had developed a call tree previously.
#20- This is what they saw on Thursday. Looking at box on far the right, variables are saying that conditions were not looking good for Sunday. Thurs #s not bad, but Sunday looks bad. Reason why: look down - mechanical reasons, mixing heights calculations.
#21 – The last intelligence that they got on Sat afternoon, looking at #s talking with NWS. 12 hours out in front. Smoke analysts were looking at the situation; things were not looking good. They decided they were going for it.
#23 – 10 meter wind speed, see what winds are doing at surface
#24- See population of dispersion box, every box is checked except surface air temp b/c 71 temp. With this situation, it looks like it is critical; something will happen.
#25 – Actual product that got dispersed.
#26 – Simple bullet statements – special note in red.
#27 – Same box – what went out on smoke report.
#28 – Google maps showing area of concern.
#29 – Hysplit run, #30 – Same thing, rotating.
#31 - The green house with flag is the District office (earlier depicted in the Smokey Bear photo), #33 – Information is going out.
#35 – Not in the report, 3:30 am. Time when it was supposed to occur was between 5 and 9am. Along highway 70 it was clear. As the sun started to come up, the smoke/fog formation was at treetop level, but visibility was clear at the surface. Gary was thinking that he was going to have to brief everyone and "eat crow".

Then it came down to the surface and visibility went to 550'. NPS MAV chart shown in lower right of slide. If you look at 55mph, under ideal conditions it will take you 265' to stop.
#37 - Two first responders to a superfog event in 2008 were killed, the photo on the bottom left shows the visibility 90 min after accident.
#38 – This illustrates is why this is so important
#39 – Some of the info that was looked at where head signatures were tracked. Sat before Sun AM, a pyro-cumulous cloud was generated. No helicopter would take Gary up but NWS reported that fog was going to form whether we had smoke or not. They went ahead and issued a warning.
#42 - Air Quality Alert
#43 – Bill Jackson, works with the Division of Air Quality
#44 – Just the first page of what Bill was putting out to address the air quality issues to populations downwind from the fire. Gary was working with local emergency mgmt/highway patrol.
#45 – Now to Q &A: are there barriers? Elgin Air Force base is first user to request these elements to be added. The programming code has already been written but it more or less a cut and paste operation. West of Mississippi, superfog events are less critical due to drier air mass.

Todd Richardson asked Gary a "Type 2" Incident Command question: when dealing in areas with different terrains, does this model work and where would you test it out?
Gary answered: If the conditions are occurring at ridgetops, the complexity goes up tremendously. You'd have to interpret how topography will influence the smoke behavior (things will come down to surface, downslope); If you have a thermal belt, you might not have an issue, but if you don't have a thermal belt, you might have an issue. (It is) definitely more of a complex issue if it's not just rolling flat land. The FBAM and IMET should be (minimum) sitting side by side. Other products are avail in other areas.

Comment from New Mexico: NM/AZ incident management teams agree that IMET needs to work with air quality people.

It's hard to do all of the work solo – FBAM should be able to handle it, but make sure that they really can; they sometimes get overwhelmed with responsibilities. Every incident is different.

Gary commented that for those who are interested, contact your WFO and say that you want this. Chris Nixon has all the codes right now. Mike B asked what the turn-around might be if we requested the info from the local office. Gary said that in talking to the office that developed the program, they said that it should be done in two to three months. Google "NWS GFP". You won't get it if you don't request it. If you have questions, please send them to Gary or Mike B.

Note: The next Smoke Managers' Call is anticipated to be in the last week of March.
Mike – now early April is more likely…